

Building to Learn/Learning to Build

Collaboration Between a Mexican Squatter Community and American Architecture Students

Sergio Palleroni



There is a crisis in the architectural profession and in architectural education. Architects are beginning to lose control over the building process. Interior designers have taken over design of the building from within, engineers have begun to offer complete building design services, and builders now incorporate design services into their repertoire.¹ As power is relinquished, collaboration and communication between architects and other disciplines become

essential qualities for professional success. This shift can be seen most clearly in the recent emergence of design/build firms that marry the professions of designer, engineer and builder. This change in architectural practice has a profound affect on the profession, as well as on its educational institutions. As a professional program, architecture schools have a responsibility to prepare their students for a changing world and a changing profession.

Unfortunately, many architecture programs continue to emphasize a pedagogical model that focuses on individual success rather than group collaboration and abstract solutions to problems, which are disconnected from “real life.”² In 1996, the Carnegie Foundation for the Advancement of Teaching in the United States published a major study of architectural education in which they cited recommendations and goals for future reform.³ They recognized that in order to succeed in this new environment students would need to be more connected to real life issues, better collaborators and communicators, and develop a philosophy of caring for and service to the community. Architecture schools have been slow to adopt the measures recommended by the commission, yet a strong trend in architectural education has begun to emerge in the last decade in a range of design/build programs.

An example of this trend is the pedagogical model of the BASIC Initiative, an educational program founded at the University of Washington and now based at the University of Texas Austin.⁴ This educational initiative challenges students in the design fields to collaborate with each other, and with those in other disciplines, to arrive at design solutions to problems faced by communities in need. Evolving from a foreign study program in Mexico for architecture students that began in 1989, the programs of the BASIC Initiative have

become increasingly multidisciplinary as a result of the challenges faced by client communities. The collaboration with other disciplines has introduced not only new forms of knowledge and methods of inquiry, but also pedagogical approaches that have impacted the nature of the BASIC Initiative design studios. Based on the pedagogical theories of Dutton (1996) and Freire (1973), the studio has taken the sustainable development and survival of marginalized communities worldwide as its challenge. This interdisciplinary program removes students from their own familiar culture to force issues such as these to the forefront of their minds. At the end of twelve weeks, they will have helped to create, and build a building that belongs to the community. Along the way students also discover the potential of the group’s collective knowledge.

The program integrates intellectual explorations and first-hand experience, giving it a richness and realism not often found in the traditional design studio. The schedule is demanding. Students spend the first two weeks of the quarter investigating the physical and cultural characteristics of the client community, documenting the site and programmatic requirements, and engaging in group design charrettes. The schematic design and construction plans are shared with the community, marking the beginning of the eight-to-ten-week “design/build.” Each student spends five days a week working on

site and one day on a group field trip. Seminars, design and documentation fill at least five evenings per week.

The class divides into small groups, each group taking responsibility for the completion of a portion of the project. The teams convene each morning to discuss their progress and to ask for help when necessary. The process of consensus building in the initial design charrette provides students with a common basis from which to discuss and develop ideas. In this process, the community acts as both client and collaborator to insure that the project addresses both immediate and long-term needs. The pedagogical structure of a BASIC Initiative program emerged from the through the seminal experience gained in its first program, the Design/Build Mexico program, as it attempted to engage (and negotiate between) the sometimes conflicting demands of academic education and social action in service of a fast growing squatter community (now city) in Mexico.

Squatter communities have significantly transformed the urban landscape of Mexico in the decades since the 1960s. They remain a very present reminder of the effects of globalization on this rapidly modernizing country. Some cities (such as those that border the great northern neighbor) have been so consumed by these settlements they are no longer distinguishable from them. The problems of communities

like these are grave. The lack of basic physical infrastructure creates areas with little clean water or paved roads, poor sewage systems, and no local schools or government systems.

Along with these physical transformations come massive shifts in the social fabric of this developing country. For every two migrant workers in the United States, one woman is left behind with the family's children, in addition to those too poor, sick, or old to make the journey. These and other related circumstances can cause tremendous strain on the life of the community and its residents calling into question the ultimate physical and cultural sustainability of these communities. Despite the cultural fragmentation and pressure resulting from these current circumstances, long-standing community traditions of building remain the backbone of these squatter settlements. These traditions, along with an eagerness for community empowerment, are indispensable resources for positive future development.

Jose Maria Morelos Solar Kitchen, 2004–2005

In 2004 we returned for the twelfth project in the communities of Tejalpa-Jiutepec; two traditional villages that, under the economic and social impacts of globalization on Mexico, have grown twelve-fold in a decade from immigration of poor farmers no longer able to compete with the global economies of

farming. The project, a solar kitchen, was a retrofit to the Jose Maria Morelos School, which one of the many informal communities that now make up Tejalpa and Jiutepec had built a decade earlier. At the southernmost edge of the informal communities we have been working on since the late eighties, the school is built upon the agricultural terraces, which the local indigenous people of the region had cultivated for the last four thousand years. In this hillside location, on leftover land, which is often the condition of many of the public works we have built in this growing squatter community, the school had a lack of play space since the buildings of the school had taken up the little flat ground that existed. The space that remained on the hillside provided minimal play space for the school's 360-plus elementary school children.

The previous year we had experimented with a design for a solar condenser stove and oven for the kitchen of another elementary school a kilometer away. The design of the earlier collector, based on German engineering by Solaird, had been adapted through a counterweight, much like a grandfather clock, to track the sun. Basically built from bicycle parts for the mechanism and small vanity mirrors for the parabolic mirror surface, the solar parabolic mirror concentrates the energy of the sun on a pot, or stove in the kitchen.

The device though complicated in appearance, is a simple and inexpensive way to harness the free energy of the sun to help reduce the cost of cooking meals for the children of this very poor community. Cooking meals for their own children is one of the ways that



the mothers of the community had organized themselves to both supplement the diets of their children and reduce costs.

The schools, which are run by the federal government (even when the community often is forced to build its own schools in these communities), had agreed to allow the mothers on the school grounds to cook for their children. This has been a major policy victory for Comunidad AC, the not-for-profit organization we have been working with for almost two decades. Now the challenge was to rethink the idea of the kitchen as an ecological response to the needs and conditions of the squatter community.

The students of the program took on the challenge of the solar kitchen as a means to rethink not only the energy requirements of a traditional kitchen but also its use of water, toilets, lighting, as well as an opportunity to impact nutrition and homebuilding in the community. In other words they re-formulated the challenge of the school's kitchen as a challenge to affect change in the homes of the parents whose children attended the school. The kitchens in many of these homes, in students' analysis of the community, were often the source of a great deal of the ecological impact this rapidly growing and informal settlement, with little infrastructure, was having on the environment. The design of the kitchen reflected these concerns with

its incorporation of alternative, non-polluting (and economical) technologies like solar cooking, solar water heating, greywater filters to treat the dishwater, and natural light as the main source of lighting. The addition of an open dining pavilion allowed the students to also incorporate rainwater catchments and eventually photovoltaic panels to take the kitchen essentially off the grid.

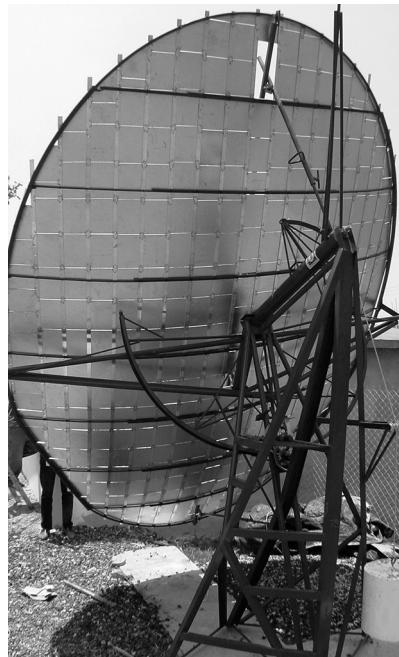
The design of the project happened within ten days of arriving on site, after which the students submitted construction documents for a building permit, which was expedited to allow for as much time for construction as possible. The short time allowed for design in the BASIC Initiative Programs is intentional, since it allows the faculty of the program to focus the students' attention on the site and the construction of the building where many of the construction details are better resolved. As the students become familiarized with the construction technologies used by the building trades in Mexico by learning them firsthand they become more capable to resolve the details in ways which best utilize the local resources.

This happened in the solar kitchen in the development of extensive green walls, which fed by the greywater provided necessary shading from the western sun on the buildings' long façade. The screens used angle sections of steel, a material that is readily available and





Existing school



Solar parabolic mirror



used in Mexico and can be easily re-utilized in later projects (thus making it a sustainable practice). Incorporation of found and salvaged materials such as leftover tiles and broken dishes in the counters of the kitchen (the broken dishes brought some humor to the counters where the children are served) help the project become part of the local fabric.

In the case of the solar kitchen this proved particularly relevant in several ways. The solar parabolic array turned out to be more of a challenge than originally anticipated, and this allowed additional time to resolve other design elements with the students. In addition we initiated a series of weekend workshops, which allowed the students the opportunity to conduct seminars with the community on the value and use of the new technologies. Classes on nutrition, health, solar energy, water use and contamination were offered, and at the end of the course a certificate was awarded by Comunidad and the Ministry of Education of the State of Morelos to those who attended.

Viewed in this light, squatter settlements have, it could be argued, a healthier connection to building than does most of the first world, where economic prosperity can encourage a disconnect between high architecture and basic issues of civic importance. Perhaps this is why the Mexican squatter community context is a fitting context to the discourse on reestablishing relevance

in architectural education. In addition, in this context the programs of the BASIC Initiative are able to engage in an architecture that is a direct response to the realities affecting much of the world's population, by employing a pedagogical structure that fosters both building skills and social skills such as communication and compassion. These experiences and skills equip students for a valuable professional practice that is connected and relevant to the world around them.

Notes

1. William J. Carpenter, *Learning By Building* (New York: Van Nostrand Reinhold, 1997).
2. Thomas A. Dutton, *Critical Voice in Architectural Education* (New York: Bergin and Garvey, 1996).
3. Ernest L. Boyer and Lee D. Mitgang, *Building Community: A New Future for Architecture Education and Practice: A Special Report* (Princeton: Carnegie Foundation for the Advancement of Teaching, 1996) 135.
4. The Design/Build Mexico Program began at the University of Oregon in 1989 and broadened to become the BASIC Initiative with the adoption of the program by the University of Washington in 1995.



Kitchen and dining pavilion



